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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE APPLICATION OF:
Klaus SCHULTES, et al.

GROUP: 1712

SERIAL NO: 10/502,057

EXAMINER: MOORE

FILED: October 28, 2004

FOR: IMPACT-RESISTANT MOLDING MATERIALS AND MOLDINGS

PRE-APPEAL BRIEF REQUEST FOR REVIEW

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.

This request is being filed with a Notice of Appeal.

The review is requested for the reason(s) stated on the attached sheet(s). No more than five (5) pages are provided.

I am the attorney or agent of record.

Respectfully Submitted,

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ATTACHMENT TO PRE-APPEAL BRIEF REQUEST FOR REVIEW

The Applicants respectfully request pre-appeal review of the following issues:

(1) Obviousness. Claims 1, 2, and 4-16 stand rejected under 35 U.S.C. § 103(a) over Geck et al and Mautner et al.

The present invention as set forth in **Claim 1** relates to an impact-resistant molding material comprising

poly(meth)acrylate and

at least one silicone rubber graft copolymer comprising

from 0.05 to 95% by weight, based on the total weight of the copolymer, of a core a) comprising an organosilicon polymer which has the general formula $(R_2SiO_{2/2})_x \cdot (RSiO_{3/2})_y \cdot (SiO_{4/2})_z$ where x = from 0 to 99.5 mol%, y = from 0.5 to 100 mol%, z = from 0 to 50 mol%, where R means identical or different alkyl or alkenyl radicals having from 1 to 6 carbon atoms, aryl radicals, or substituted hydrocarbon radicals,

from 0 to 94.5% by weight, based on the total weight of the copolymer, of a polydialkylsiloxane layer b), and

from 5 to 95% by weight, based on the total weight of the copolymer, of a shell c) comprising organic polymers, wherein the core a) encompasses vinyl groups prior to the grafting process, and the shell c) is obtained via free-radical polymerization of a mixture in which acrylic esters and methacrylates are present,

wherein the ratio by weight of acrylic ester to methacrylate in the mixture for preparing the shell c) is in the range from 50:50 to 1:99.

Geck et al and Mautner et al fail to disclose or suggest an impact-resistant molding material as claimed comprising **PMMA** and in which the at least one silicone rubber graft copolymer comprises from 5 to 95% by weight, based on the total weight of the copolymer, of a shell c) comprising organic polymers, wherein the core a) encompasses vinyl groups

prior to the grafting process, and the shell c) is obtained via free-radical polymerization of a mixture in which acrylic esters and methacrylates are present, wherein the ratio by weight of acrylic ester to methacrylate in the mixture for preparing the shell c) is in the range from **50:50 to 1:99**.

Geck et al disclose another type of elastomeric particles which are pre-crosslinked. See col. 2, lines 41and 58-59. The particles are used to modify **coatings** and not molding materials as claimed. See col. 2, lines 43 and 56-57. The ratio by weight of acrylic ester to methacrylate in the mixture for preparing the shell c) in the range from **50:50 to 1:99** is not disclosed in Geck et al.

Mautner et al describe the composition and process of preparation of elastomeric particles. See col. 2, starting at line 64. However, the notched impact strength of the particles is very low compared to that of the present invention (see Tables below) because the ratio by weight of acrylic ester to methacrylate in the mixture for preparing the shell c) in the range from **50:50 to 1:99** is not disclosed in Geck et al.

The Examples in the specification describe the superior properties of the present invention as follows in Tables 4 and 5 at pages 23-29 of the specification.

Table 4

	Inventive example 1	Comparative example 1	Comparative example 2
Die swell [%]	22.7	15.4	26.7
Viscosity η_s (220°C/5 MPa) [Pa s]	2180	2447	2075
Mini-Vicat [°C]	100.5	99.1	98.7
Izod NIS [kJ/m^2]			
23°C	5.6	3.22	5.25
-20°C	5.0	2.88	4.18
-40°C	4.4		
Modulus of elasticity [MPa]	2320	2129	2277

Table 4: Continuation

	Inventive example 2	Inventive example 3	Inventive example 4
Die swell [%]			
MVR (230°C/3.8 kg) [cm^3/10 min]	2.25	1.94	2.45
Mini-Vicat [°C]	101.0	100.6	100.9
Izod NIS [kJ/m^2]			
23°C	6.4	5.7	6.1
-20°C	5.4	4.5	5.3
Modulus of elasticity [MPa]			

Table 4: Continuation

	Inventive example 5
Die swell [%]	
MVR [cm^3/10 min]	1.7
Mini-Vicat [°C]	100.8

Izod NIS [kJ/m^2] 23°C -20°C	 6.3 4.9
Modulus of elasticity [MPa]	

From the data set out in Table 4 it can be seen that modifiers obtainable by grafting a shell comprising a mixture in which acrylic esters and methacrylates are present onto a vinyl-containing core can give an **excellent improvement in the impact resistance of PMMA** molding materials.

Table 5

	Inventive example 1	Comparative example 3	Inventive example 6
Die swell [%]	22.7	25	19.8
Viscosity η_s (220°C/5 MPa) [Pa s]	2180	1930	2380
Mini-Vicat [°C]	100.5	100	100
Izod NIS [kJ/m^2] 23°C	 5.6	 4.3	 6.4
Modulus of elasticity [MPa]	2320	2400	2200

Table 5 shows that mixtures of acrylate rubber modifiers with silicone rubber modifiers have superior impact resistance values at room temperature. The selection of the mixtures was such that their softening point was similar. This improvement in impact resistance values at room temperature is attributable to unforeseeable synergy.

These superior results are not disclosed or suggested by Geck et al and Mautner et al, alone or in combination.

Applicants request the Examiner to withdraw the **provisional double patenting** rejection if it is the only issue remaining in one case and convert the provisional rejection in the other application to a double patenting rejection. MPEP 822.01.

CONCLUSION

In view of the above remarks, the Applicants respectfully request that the rejections of record be withdrawn.